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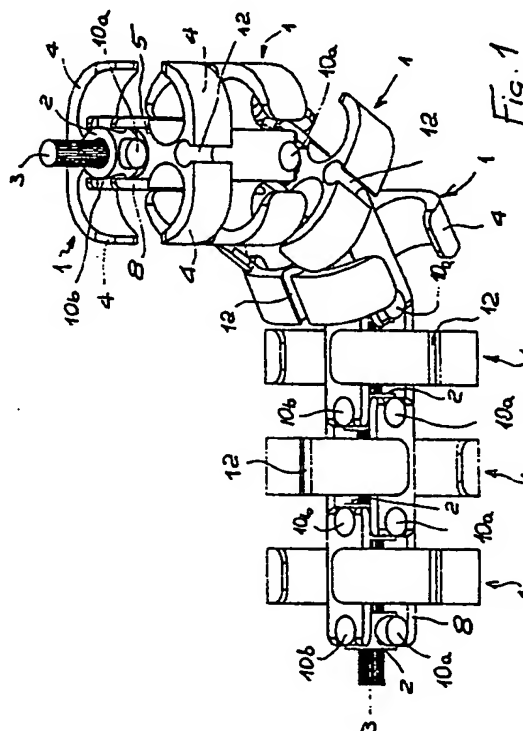
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### (54) Flexible cable guide with two-directional joints.

(57) The flexible cable guide according to the invention is constituted of a plurality of shaped elements of I-section (1) having curved flanges (4), defining aligned cylindrical spaces separated from one another by the central web (5) of the shaped element, the elements being connected to one another by two-directional joints (2), it being possible for a plurality of electrical supply cables, signal cables or the like to be housed in the cylindrical spaces defined by the curved flanges (4).



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### Flexible cable guide with two-directional joints.

In furniture for offices, such as desks, working tables and the like, as indeed in other furnishing items, the need arises for having available equipment of various types which require electrical supply and/or connections, by means of electrical cables, to other equipment physically remote from them. Examples of such items of equipment are telephone apparatuses, computers, calculating machines, illuminating equipment and so on, which are frequently present, often simultaneously, on desks and similar furniture.

This has the result that there is a large number of cables, which must reach different zones of the furniture and which it is undesirable to allow to hang freely from the furniture itself, both for aesthetic and for safety reasons.

The requirement therefore arises for having available a cable guide which will enable such cables to be housed in a single element, keeping them aligned and separate from one another, and which moreover can be arranged along the profile of the wall of the furniture by which the cable guide must be carried, following also variations in direction.

These results are achieved by the present invention, which provides a flexible cable guide which is constituted of a plurality of shaped I-section members with curved flanges, defining aligned cylindrical spaces separated from one another by the central web of the shaped element, the elements being connected together by two-directional joints, it being possible for several electrical supply cables, communication cables and the like to be housed in the cylindrical spaces bounded by the curved flanges.

Each shaped element possesses, on each of its base surfaces, a pair of lugs projecting from the central web parallel to the axis of the element itself, spaced from each other, adapted for receiving in articulated manner at the end a pair of pins of an articulation element, constituted of an annular body having two pairs of pins projecting radially in mutually perpendicular directions, the lugs of a contiguous shaped element, rotated through 90° with respect to the first, being capable of being connected to the second pair of pins of the articulation element, the pairs of lugs and the articulation element connected to them constituting the two-directional joint, of cardan type, for connecting together contiguous shaped elements.

The web of the shaped element possesses an axial hole, which, in the assembled position, is aligned with the central hole of the articulation element, permitting a stiffening cable to be inserted into said aligned holes

In a median position of the flanges of the shaped element, there is a groove having undercut re-entrant edges, into which groove shaped profiles for securing the cable guide to fixed members may be locked.

Further details may be found from the following description, with reference to the attached drawings, in which the figures show:

Fig. 1, a perspective view of the cable guide according to this invention, in a curved layout;

Fig. 2, the cable guide of Fig. 1 in lateral view, curved in one direction;

Fig. 3, the cable guide curved in a direction perpendicular to that of Fig. 2;

Fig. 4, a shaped element of the cable guide in front view;

Fig. 5, the element of Fig. 4, in lateral view from one direction;

Fig. 6, the element of Fig. 4 in lateral view in a direction perpendicular to the first;

Fig. 7, the articulation element of the cable guide in front view;

Fig. 8, the articulation element in lateral view.

As Figures 1, 2, 3 show, the cable guide according to this invention is constituted of an articulated chain of shaped elements, which is flexible in every direction; the articulated elements possess seatings adapted for receiving and holding in position, separated in orderly manner, a plurality of electrical and signal cables.

In particular, the cable guide comprises a plurality of shaped elements 1, connected together by the interposition of an articulation element 2; both the articulated elements 1 and the articulation elements 2, as can be better seen from Figures 4 and 7, are axially traversed by holes and into said hole it is possible to insert a central guide cable 3.

Each element 1 is constituted of a substantially I-section body, in which the opposed flanges 4 are curved towards each other to form, in cooperation with the central web 5, four substantially cylindrical, defined spaces 6, intended for housing the cables and accessible from outside through the open zone 7.

On the central web there are formed the projections 8, equipped at the end with a hole 9a, as shown in Figures 4 to 6 or, as illustrated in Figures 1 to 3, equipped with a fork 9b having re-entrant ends; into the holes 9a or the forks 9b, the opposed radial pins 10a of the articulation element 2 are inserted in locked manner, the articulation element being composed of an annular member from which two pairs of mutually perpendicular pins, 10a and 10b, project radially outwards.

The pins 10b engage into the holes or forks of a succeeding element 1, which has been rotated through 90° with respect to the preceding one, thus forming a joint of the cardan type which enables the axes of the two consecutive shaped elements 1 to be orientated at an angle relative to each other in any plane; the cable guide according to this invention is therefore composed of a plurality of shaped elements and of articulation elements connected alternately, constituting a flexible structure adapted for being curved according to requirements, as illustrated in the portion shown in Figures 1, 2 and 3.

The spaces 6 of the consecutive shaped elements 1 are aligned with one another and therefore can each house one or more cables 11, indicated in broken line in Fig. 4, which are separated from one another alternately by the webs 5 of the successive shaped elements 1.

The insertion and removal of the cables 11 into and out of the cable guide is effected through the openings 7, utilizing the flexibility of the cables themselves and of the cable guide; it is also possible to lead out through the openings 7 branches of the cables to some apparatus connected to them, or to lead in new cables at an intermediate position in the cable guide.

With advantage, the flanges 4 of the shaped body 1 comprise the grooves 12, of substantially cylindrical form, having re-entrant external edges undercut in respect of the maximum width of the groove; in said groove, which, in the contiguous shaped elements rotated through 90° relative to each other, is aligned with the openings 7, shaped profiles 13 or the like may be inserted in locked manner, by means of which the cable guide may be secured to fixed structures, such as items of furniture, walls and the like, by adhesive, screws, locking-in or similar fixing means, depending upon the surface to which the profiles 13 are fixed.

#### Claims

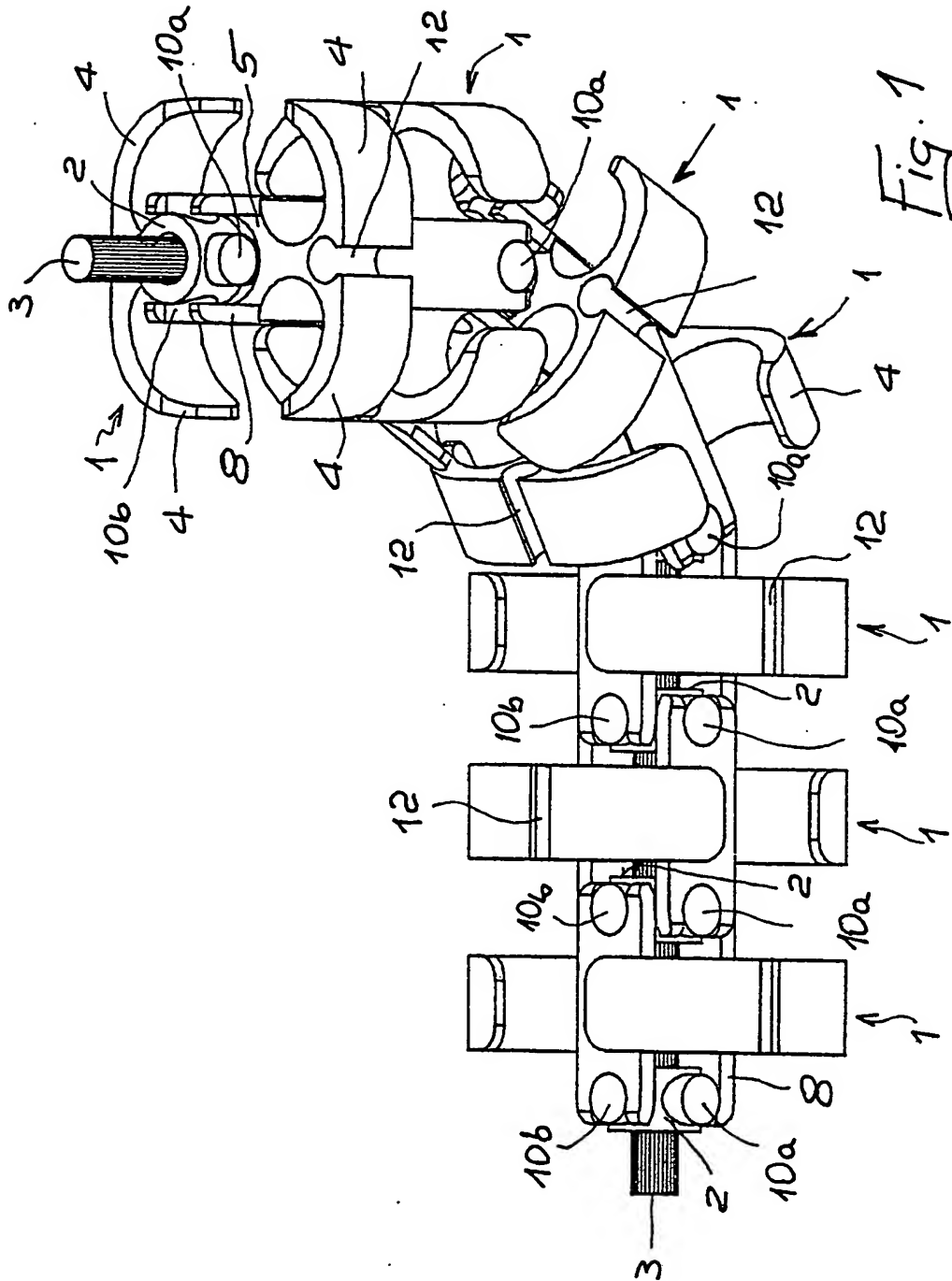
1. Flexible cable guide, characterized by the fact that it is constituted of a plurality of shaped elements of I-section having curved flanges, defining aligned cylindrical spaces separated from one another by the central web of the shaped element, the elements being connected to one another by two-directional joints, it being possible for a plurality of electrical supply cables, signal cables or the like to be housed in the cylindrical spaces defined by the curved flanges.

2. Flexible cable guide according to Claim 1, characterized by the fact that each shaped element possesses, on each of the base surfaces, a pair of lugs projecting from the central web parallel to the

axis of the element itself and spaced apart from one another, these lugs being adapted for receiving in articulated manner, at their ends, a pair of pins of an articulation element, constituted of an annular body having two pairs of pins projecting radially in mutually perpendicular directions, it being possible for the lugs of a contiguous shaped element, rotated through 90° with respect to the preceding one, to be connected to the second pair of pins of the articulation element, the pairs of lugs and the articulation element connected to them constituting the two-directional joint, of cardan type, for connecting together the contiguous shaped elements.

3. Flexible cable guide according to Claim 2, characterized by the fact that the web of the shaped element has an axial hole which, in the assembled position, is aligned with the central hole of the articulation element, it being possible for a stiffening cable to be inserted through said aligned holes.

4. Flexible cable guide according to Claim 1, characterized by the fact that, in a median position of the flanges of the shaped element, there is a groove having undercut re-entrant edges, said groove being capable of housing in locked manner shaped profiles for securing the cable guide to fixed elements.



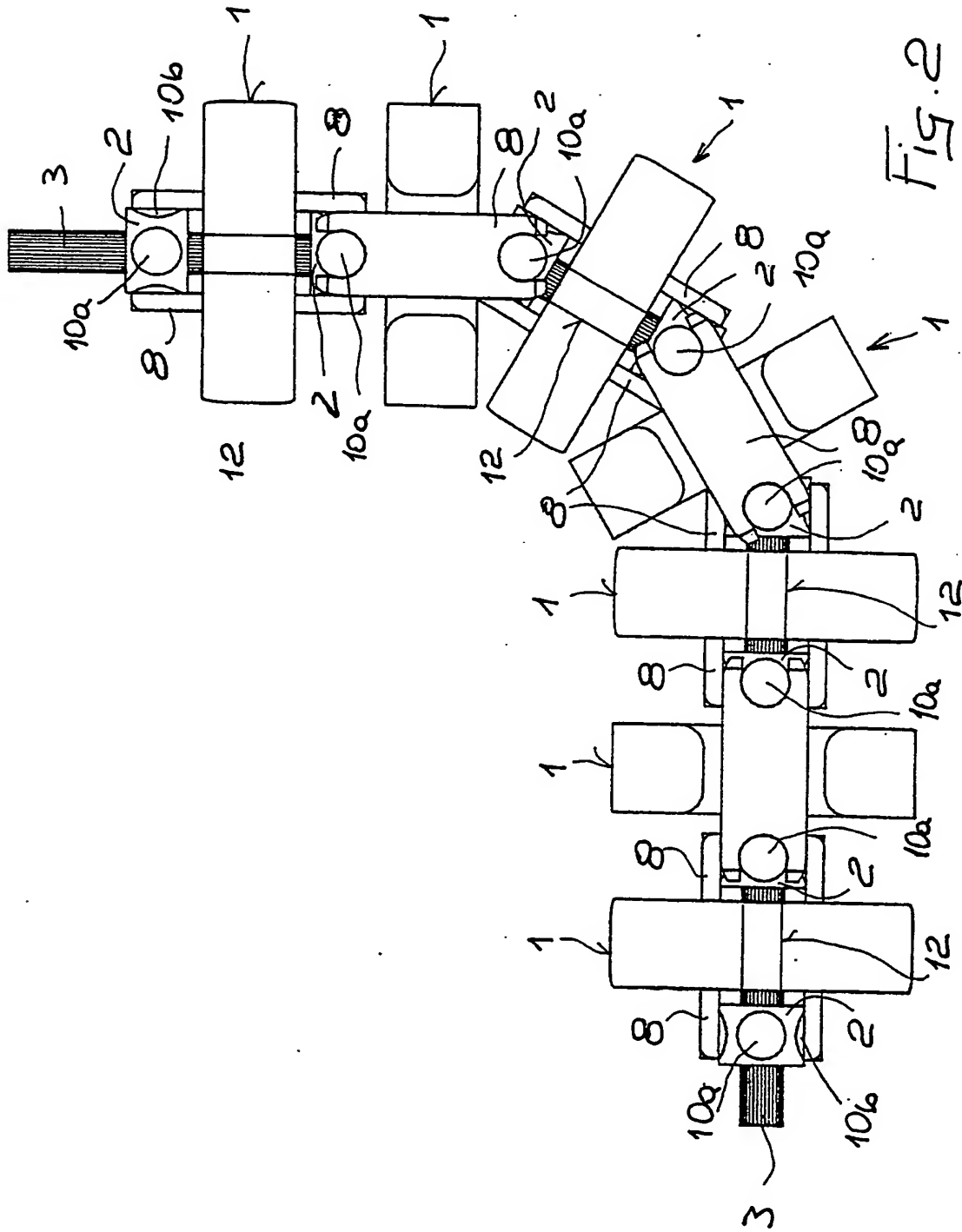


Fig. 2

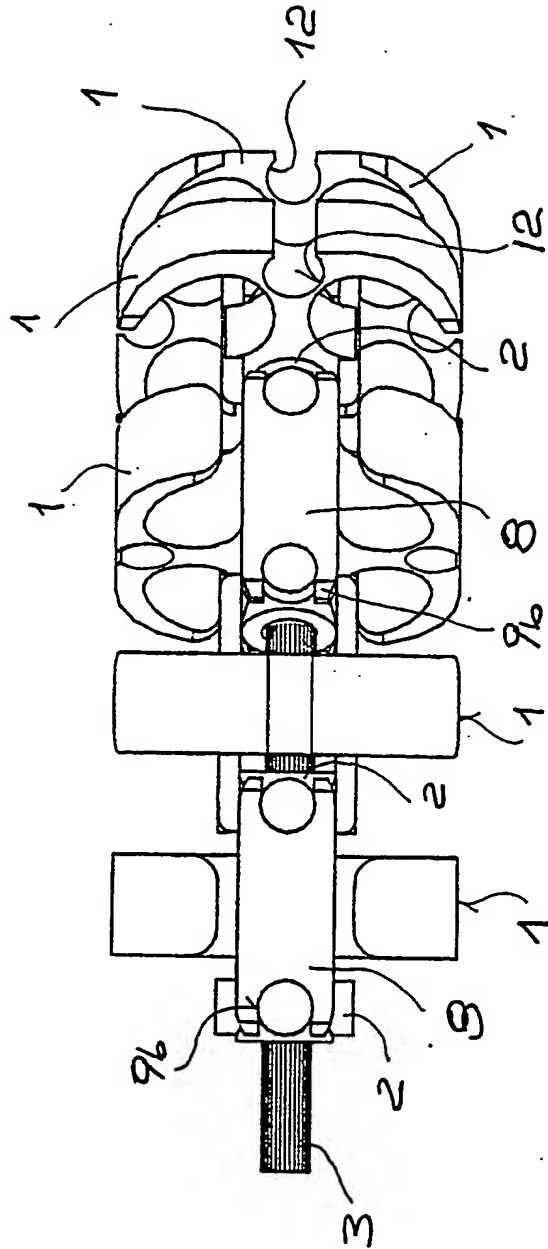


Fig. 3

